Shweta Bhandari

prof.shwetabhandari@gmail.com, shweta@manit.ac.in, er.shwetabhandari@gmail.com (+91) 9893008299, 7597385348

Research Interests

I have worked as a researcher for "Security Analysis Framework in Android Platform Project" (Grant:1000109932) funded by the Ministry of Electronics and Information Technology (MeitY), Government of India. The project contributes to the development of an open-source framework named as "DroidAnalyst" (http://prism.mnit.ac.in/droidanalyst/) for malware analysis in Android platform. My research contributes a step in the direction of securing mobile apps and user's privacy. My aim is to utilize my research and development skills to the full benefits of the organization and society.

Academic Profile

Jan 2015 - Nov 2018	PhD, Computer Science and Engineering, MNIT Jaipur **Area:** Analysis Techniques for Intra and Inter App(s) in Android **Advisors:** Manoj Singh Gaur, Indian Institute of Technology Jammu, India Vijay Laxmi, Malaviya National Institute of Technology Jaipur, India Akka Zemmari, LaBRI - University of Bordeaux, France CGPA **9.5/10.0**
2011-2013	Master of Technology, School of Computer Science and IT Indore **Advisor:** Prof. D.S. Bhilare Devi Ahilya University, Indore CGPA **9.53/10.00**
2005 - 2009	Bachelor of Engineering (Honors), Computer Science Asia Pacific Institute of Information Technology, Panipat Percentage **70%**

Teaching Experience

Maulana Azad National Institute of Technology Bhopal, as Assistant Professor (Jan 2024 To Till Now)
Subjects Taught: Data Structures,Computer Security,Design and Analysis of Algorithms,Cryptography,Operating Systems,C Programming,Data Privacy and Information Security, Mobile App Development, Ethical Hacking.

The LNM Institute of Information Technology Jaipur, as Assistant Professor (Jan 2018 to Jan 2024)
Subjects Taught: Computer Security, Mobile Application Development, Advanced Programming.

Research Experience

Department of Computer Science and Engineering, Malaviya National Institute of Technology Jaipur, as **Project Associate** (January 2015 - Dec 2017)
Project Title : Security Analysis Framework for Android Platform funded by MeitY, Government of India.

LNM Institute of Technology Jaipur, as **Scientific Officer** (August 2014 To December 2014)
Project Title : Management Information Systems

Department of Computer Science and Engineering, Indian Institute of Technology, Delhi, as **Project Associate** (July 2013 To June 2014)
Project Title : Unified Model Component-II: Model Implementation and Parallelization.

Refereed Journal Publications

Computers & Security 152 (2025) 104-379 Indexing: SCIE IF: 5.6	Yogesh Kumar Sharma, Deepak Singh Tomar,R.K. Pateriya, Shweta Bhandari. MOSDroid: Obfuscation-resilient android malware detection using multisets of encoded opcode sequences
Computers & Security 70 (2017) 392–421 Indexing: SCIE IF: 5.6	Shweta Bhandari, Wafa Ben Jaballah, Vineeta Jain, Vijay Laxmi, Akka Zemmari, Manoj Singh Gaur, Mohamed Mosbah, Mauro Conti. Android inter-app communication threats and detection techniques
Future Generations Computer Systems 109 (2020) 593-603 doi:10.1016/j.future.2018.05.047 Indexing: SCIE IF: 7.18	Shweta Bhandari, Frederic Herbeteau, Vijay Laxmi, Akka Zemmari, Partha S. Roop and Manoj Singh Gaur. SneakLeak+: Large Scale Klepto Apps Analysis.
Journal of Information Security and Applications 42 (2018) 46-56 Indexing: SCIE IF: 5.17	Shweta Bhandari, Rekha Panihar, Smita Naval, Vijay Laxmi, Akka Zemmari, Manoj Singh Gaur. SWORD: Semantic AWare AndrOid MalwaRe Detector.

Refereed Conference Publications

In Proceedings of the 18^{th} International Conference on Privacy, Security and Trust (PST) 2021, pp 1-5, Auckland ,New Zealand. CORE Rank B	Pranav Kotak, Shweta Bhandari, Akka Zemmari, Jaykrishna Joshi. Unmasking privacy leakage through android apps obscured with hidden permissions
In Proceedings of the 12^{th} ACM Asia Conference on Computer and Communications Security (ASIACCS) 2017, pp 908-910, Abu Dhabi, UAE. CORE Rank A	Shweta Bhandari, Frederic Herbeteau, Vijay Laxmi, Akka Zemmari, Partha S. Roop and Manoj Singh Gaur. POSTER: Detecting Inter-App Information Leakage Paths.
In Proceedings of the 16^{th} IEEE International Conference on Trust, Security and Privacy in Computing and Communications 2017, Sydney, Australia. CORE Rank B	Shweta Bhandari, Frederic Herbeteau, Vijay Laxmi, Akka Zemmari, Partha S. Roop and Manoj Singh Gaur. SneakLeak: Detecting multipartite leakage paths in Android apps.
In Proceedings of the 16^{th} IEEE International Conference on Trust, Security and Privacy in Computing and Communications 2017, Sydney, Australia. CORE Rank B	Vineeta Jain, Shweta Bhandari, Vijay Laxmi, Manoj Singh Gaur and Mohammad Mosbah. SneakLeak: Detecting multipartite leakage paths in Android apps.
In Proceedings of the 30^{th} IEEE International Conference on Advanced Information Networking and Applications (AINA-2016), in press, Crans-Montana, Switzerland, March 23-25, 2016. CORE Rank B	Shweta Bhandari, Vijay Laxmi, Akka Zemmari and Manoj Singh Gaur. Intersection Automata based Model for Android Application Collusion.
In Proceedings of the 13^{th} Annual IEEE Consumer Communications & Networking Conference (IEEE CCNC 2016), in press, Las Vegas, Nevada, USA, January 9 - 12, 2016. CORE Rank B	Lovely Sinha, Shweta Bhandari, Parvez Faruki, Manoj Singh Gaur, Vijay Laxmi, Mauro Conti. FlowMine: Android App Analysis via Data Flow.

Book Chapter

Recent Advances in Computational Intelligence in Defense and Secuirty Book 2017 ,Springer, Chapter,pp 519-552.	Shweta Bhandari, Parvez Faruki, M. S. Gaur, Vijay Laxmi, and Mauro Conti. DroidAnalyst: Synergic Framework for Static and Dynamic App Analysis

Research Intership

LaBRI - University of Bordeaux, France from (May-June, 2015), (Sept-Oct, 2016) and (Jan 2018)
Research team at the University of Bordeaux are expert in graph analysis, formal methods. During internship we worked on applying those techniques in Android Security. This internship proves to be the significant step to enhance and increase my research skills.

PhD Thesis

Analysis Techniques for Intra and Inter App(s) in Android
With almost universal digital convergence, mobile devices provide an attractive attack surface for cyber thieves as the devices hold personal details and have potential capabilities for eavesdropping. Android is the most popular mobile operating system and hence, is the target of malicious hackers who use the android app as a tool to gain access to private information. Academic researchers and commercial anti-malware companies are working vigorously to detect malicious apps by proposing detection tools. These tools fail when malicious behavior is scattered across more than one app. Also, android framework is not designed to protect the information that is going outside an app. In such a scenario, individual app shall appear benign whereas it may leak private information in the presence of another specific app(s). This phenomenon of intentional data leakage is termed as collusion, and involved apps are termed as colluding apps. In this thesis, we design and develop collusion analysis and detection techniques for android malware. We also propose formal methods based analysis for the detection of maliciousness causing inter-app information leakage. Currently, there is no standard app dataset available to verify efficacy and scalability of methods dealing with collusion detection. Therefore, we developed 64 wide-ranging apps exhibiting collusion as our benchmark dataset, now, available as open-source. We have also formally defined Dangerous Permissions, Sensitive API Calls, Inter-Component Communication Methods and Resource-Permission Map function that is further used to define Communication, Communication Path, Sensitive Communication Path and Application Collusion.

Invited Talks and Tutorials

- Expert lecture delivered in the Two-Week National Summer Level Certification Course on "Android App Development" organized by National Institute of Technology Tiruchirappalli from July 1 - July 12, 2024
  Topic: Intents and Shared Preferences
- Expert lecture delivered during the DST sponsored Workshop on "Machine Learning for Cybersecurity", organized by Indian Institute of Information Technology Tiruchirappalli, January 18 – 24, 2023.
  Topic: Data Extraction and Privacy
- Expert lecture delivered for Government officials Training Program on "Deep Dive into Mobile Application Security Analysis" under FutureSkills prime programme, organized by C-DAC Hyderabad during Nov 22 – Dec 1, 2021.
  Topic: Data Exfiltration and Related Issues
- Conducted two days workshop on "Android App Development" at IIT Jammu (September 12-13 2017)
- Invited for a talk on "Understanding Android Security" in 10th ACM International Conference on Security of Information and Networks (SIN 2017) held at Manipal University Jaipur, Rajasthan,India during October 11-15, 2017
- Invited speaker for "Security Awareness Workshop" held under project ISEA-II organized by CDAC-Hyderabad
- Invited speaker for GIAN course titled "Advanced Systems Security: Attacks and defenses" held during 04-07-2016 to 10-07-2016 at MNIT Jaipur
- Invited speaker for GIAN course titled "Analytical Reasoning & Experiential Learning With Applications to Software and Program Analysis" held during 09-10-17 to 13-10-17 at MNIT Jaipur

Outreach

- Dr. Shweta Bhandari attended and successfully completed Certificate in Computer Science Education (CSEDU) sponsored 12 Week Faculty Development Programme on "Machine Learning", organized by IIIT Delhi, during August 25 – December 3, 2022
- Participated in and successfully completed the Professional Development Programme on 'Implementation of NEP-2020 for University and College Teachers' held from 09-17 September, 2022.

- Member of Organizing Committee: National Workshop on Cryptology (NWC) 2023 from 1st to 5th August 2023 held at LNMIIT
- Workshop attended: National Workshop on Cryptology (NWC) 2023 from 1st to 5th August 2023 held at LNMIIT
- Program Committee Member of 16th IEEE International Conference on Security of Information and Networks (SIN CONF 2023) held on November 20-21, 2023 at Manipal University Jaipur.
- Program Committee Member of 20th IEEE India Council International Conference (INDICON) - 2023 held on December 14-17, 2023 at the National Institute of Technology Warangal

Honors and Awards

- Received Best Doctoral Dissertation Award by ISEA during 3^{rd} ISEA International Conference on Security and Privacy organized by IIT Guwahati during February 27- March 1, 2020.
- Gold Medal for securing the first position in the University during M.Tech Program (Computer Science - CGPA 9.53/10)
- Secured 97.03 percentile in Graduate Aptitude Test in Engineering (GATE 2011), Computer Science stream among more than 130,000 students.
- Holder of MHRD (Ministry of Human Resource Department, Government of India) Scholarship for Masters Program.

Personal Information

Date of Birth	17^{th} November, 1986.
Nationality	Indian
Marital Status	Married
Languages	English, Hindi.

References

Dr. Manoj Singh Gaur
Director, Indian Institute of Technology Jammu
J&K, India
director@iitjammu.ac.in

Dr. Akka Zemmari
Associate Professor, LaBRI - University of Bordeaux, CNRS
33405 Talence cedex, FRANCE
zemmari@labri.fr

Dr. Partha S. Roop
Associate Professor, University of Auckland
Aucjland, NewZealand
p.roop@auckland.ac.nz